

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Kevin Grange on October 14, 2008.

2. The following are details of the Examiner's Amendment, which is based on Applicant's After-Final Amendment received by the Office on October 7, 2008.

3. Delete Dependent claim 7 and Dependent claim 29.

4. Amend Independent claim 1 such that claim 1 in its entirety reads (added limitations underlined):

1. (Currently amended) A method, comprising:
calculating a variation between an input data rate and a pre-determined output data rate, the input data rate being based on a number of data read requests, wherein calculating the variation comprises updating a counter value representative of the variation, wherein calculating the variation further comprises:
determining a difference between a total bit group of data received from an input first-in-first-out (FIFO) and a pre-determined output data bus width; and
subtracting the difference from the counter value to update the counter value; and
compensating for the variation by modifying the number of data read requests, and wherein compensating for the variation comprises:
masking a data read request to be transmitted to the input FIFO when the counter value is either equal to or less than a lower threshold value, wherein the lower threshold value is one of the negative value or positive value of the pre-determined output data bus width; and
generating an additional data read request to be transmitted to the input FIFO when the counter value is either equal to or greater than an upper threshold value, wherein the upper threshold value is the other one of the positive value or negative value of the pre-determined output data bus width.

5. Amend Independent claim 15 such that claim 15 in its entirety reads (added limitations underlined):

15. (Currently amended) An apparatus, comprising:
an input first-in-first-out (FIFO) to receive input data at an input data rate;
an encapsulator engine coupled to the input FIFO; and
a packet pre-processor coupled to the encapsulator engine and the input FIFO, wherein the packet pre-processor is configured to calculate a variation between the input data rate and a pre-determined output data rate and to update a counter value representative of the variation, the input data rate being based on a number of data read requests, wherein the packet pre-processor calculates the variation by determining a difference between a total bit group of data received from the input FIFO and a pre-determined output data bus width, and subtracting the difference from the counter value to update the counter value, wherein the packet pre-processor is configured to compensate for the variation by modifying the number of data read requests, including,
masking a data read request transmitted to the input FIFO when the counter value exceeds a first value of a predetermined range, wherein the first value is one of the negative value or positive value of the pre-determined output data bus width, and
generating an additional data read request transmitted to the input FIFO when the counter value exceeds a second value of the predetermined range, wherein the second value is the other one of the positive value or negative value of the pre-determined output data bus width.

6. Amend Independent claim 20 such that claim 20 in its entirety reads (added limitations underlined):

20. (Currently amended) An apparatus, comprising:
means for transmitting data through a communication channel having a bandwidth;
an input first-in-first-out (FIFO) to receive input data from the communication channel at an input data rate;
means for determining a difference between a total bit group of data received from the input FIFO and a pre-determined output data bus width to calculate a variation between the input data rate and a pre-determined output data rate, the input data rate being based on a number of data read requests;
means for subtracting the difference from a counter value representative of the variation;
means for masking a data read request transmitted to the input FIFO when the variation exceeds a first threshold value of a pre-determined range to compensate for the variation to increase a utilization efficiency of the bandwidth, wherein the first threshold value is one of the negative value or positive value of the pre-determined output data bus width; and
means for generating an additional data read request transmitted to the input FIFO when the variation exceeds a second threshold value of the pre-determined range to compensate for the variation to increase the utilization efficiency of the bandwidth, wherein the second threshold value is the other one of the positive value or negative value of the pre-determined output data bus width.

7. Amend Independent claim 28 such that claim 28 in its entirety reads (added limitations underlined):

28. (Currently amended) A method, comprising:
- calculating a variation between an input data rate and a pre-determined output data rate, the input data rate being based on a number of data read requests, wherein calculating the variation comprises updating a counter value representative of the variation, wherein calculating the variation further comprises:
 - determining a difference between a total bit group of data received from an input first-in-first-out (FIFO) and a pre-determined output data bus width; and
 - subtracting the difference from the counter value to update the counter value; and
 - compensating for the variation by modifying the number of data read requests, and wherein compensating for the variation comprises:
 - masking a data read request to be transmitted to the input FIFO when the counter value is either equal to or greater than an upper threshold value, wherein the upper threshold value is one of the positive value or negative value of the pre-determined output data bus width; and
 - generating an additional data read request to be transmitted to the input FIFO when the counter value is either equal to or less than a lower threshold value, wherein the lower threshold value is the other one of the negative value or positive value of the pre-determined output data bus width.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

REASONS FOR ALLOWANCE

8. The following is an examiner's statement of reasons for allowance:

Claims 1-6 and 9-28 are allowed.

Present invention is drawn to communications systems and protocols, particularly to data rate control via a communications apparatus. Each of the Dependent claims 1, 15, 20 and 23, as amended above, contains uniquely identified allowable subject matters, which are those limitations underlined below:

Claim 1, ... subtracting the difference from the counter value ...

... masking a data read request to be transmitted to the input FIFO when the counter value is either equal to or less than a lower threshold value, wherein the lower threshold value is one of the negative value or positive value of the pre-determined output data bus width; and

generating an additional data read request to be transmitted to the input FIFO when the counter value is either equal to or greater than an upper threshold value, wherein the upper threshold value is the other one of the positive value or negative value of the pre-determined output data bus width.

Claim 15, ... *subtracting the difference from the counter value ...*

... masking a data read request transmitted to the input FIFO when the counter value exceeds a first value of a predetermined range, wherein the first value is one of the negative value or positive value of the pre-determined output data bus width, and

generating an additional data read request transmitted to the input FIFO when the counter value exceeds a second value of the predetermined range, wherein the second value is the other one of the positive value or negative value of the pre-determined output data bus width.

Claim 20, ... *means for subtracting the difference from a counter value ...*

... means for masking a data read request transmitted to the input FIFO when the variation exceeds a first threshold value of a pre-determined range to compensate for the variation to increase a utilization efficiency of the bandwidth, wherein the first threshold value is one of the negative value or positive value of the pre-determined output data bus width; and

means for generating an additional data read request transmitted to the input FIFO when the variation exceeds a second threshold value of the pre-determined range to compensate for the variation to increase the utilization efficiency of the bandwidth, wherein the second threshold value is the other one of the positive value or negative value of the pre-determined output data bus width.

Claim 23, ... *subtracting the difference from the counter value ...*

... masking a data read request to be transmitted to the input FIFO when the counter value is either equal to or greater than an upper threshold value, wherein the upper threshold value is one of the positive value or negative value of the pre-determined output data bus width; and

generating an additional data read request to be transmitted to the input FIFO when the counter value is either equal to or less than a lower threshold value, wherein the lower threshold value is the other one of the negative value or positive value of the pre-determined output data bus width.

It is noted hereby that the prior arts applied throughout the prosecution of the present invention, individually or in combination, failed to anticipate the above underlined features or render them obvious. Thus all of the above listed Independent claims, as amended, are allowed.

Consequently, the Dependent claims 2-6, 9-14, 16-19, 21, 22, and 24-28 as presented in Applicant's after-final amendment of 10/7/2008 are also allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANDREW LAI whose telephone number is (571)272-9741. The examiner can normally be reached on M-F 7:30-5:00 EST, Off alternative Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on 571-272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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